

REMARKS

Applicant cancels the withdrawn claims 1-23 (see Applicant's Response to Restriction Requirement, filed March 17, 2004) without prejudice or disclaimer, and adds new claims 32-39, which parallel respective claims 24-31, but avoid the "means plus function" terminology. Applicant also amends claim 26 explicitly to recite the feature of a by-pass switch comprising an active load for providing a variable load on a mixer.

Therefore, claims 24-39 are now pending in this application.

The Examiner rejects under 35 U.S.C. § 103(a):

- claims 24 and 25 as being unpatentable over Kennan;
- claims 26 and 27 as being unpatentable over Flood et al. (Flood);
- claim 28 as being unpatentable over Broderick in view of Tanji and Kennan; and
- claims 29 and 31 as being unpatentable over Broderick in view of Tanji and Kennan and further in view of Yamaguchi et al. (Yamaguchi).

The Examiner indicates that claim 30 would be allowable if rewritten in independent form including the limitations of the base claim and any intervening claims.

Applicant respectfully traverses the Examiner's rejections as follows.

Applicant's invention provides mixers (claims 24 and 25), doublers (claims 26 and 27), and transceivers (claims 28-31) comprising unique combinations of features including, *inter alia*, an active variable inductor which may, but is not required to, be employed at low to intermediate frequencies ranging from 1 to 7 GHz. In particular, applicant's independent claims 24, 26, 28

and 31 provide a mixer, a doubler, and two types of transceivers, respectively, which employ at least one active variable inductor according to the invention.

Applicant's independent claims 24, 28 and 31 explicitly recite the features of "an active load providing a variable load on mixing means" (claims 28 and 31; see also claim 24).

With regard to claim 24, the Examiner alleges that Kennan's transistor 60, arranged as shown in its Fig. 4 (see also Id., Fig. 2), corresponds to an active load as recited in claim 24. Kennan discloses that transistor 60 operates as an active load for amplifier FET 62. Also, Kennan describes an "IF amplifier 44 [which] amplifies the intermediate frequency signal and operates as an active load for the mixer" (see Id., col. 3, lines 29-44). Applicant respectfully submits that, contrary to the Examiner's analysis, Kennan does not disclose that either its transistor 60, or amplifier 44, provides a variable load. However, the Examiner alleges such implementation would have been obvious to one of ordinary skill in the art of semiconductor circuits (see Office Action, paragraph 3).

With regard to claims 28 and 31, the Examiner acknowledges that Broderick, as well as other cited secondary references, does not disclose the feature of an "active load" and relies on Kennan to supply this deficiency. As in the case of claim 24, the Examiner alleges that implementing Kennan's active load as a variable load would have been an obvious variation (see Office Action, paragraph 5). However, as noted above, nowhere does Kennan disclose, teach or suggest that its active load (i.e., transistor 60 and/or amplifier 44, arranged as shown in Figs. 4 and 2 of Kennan) provides a variable load.

Applicant's amended independent claim 26 provides a doubler which includes, *inter alia*, a mixer and a by-pass switch comprising an active load for providing a variable load on the mixer. The Examiner alleges that Flood discloses a doubler which includes a by-pass switch in the form of "switching circuit 70" (see Id. col. 6, lines 27-39; and Fig. 1-3). The Examiner further alleges that it would have been obvious to one of ordinary skill in the art to implement Flood's switching circuit 70 to include an FET. However, nowhere does Flood disclose, teach or suggest that its switching circuit 70 includes an active variable load.

In summary, the Examiner's alleged *prima facie* case of obviousness is based on the following conclusion (which amounts to the Examiner taking an official notice as to the common knowledge in the art of active inductors at the time of Applicant's invention):

although Kennan is silent on the variable load, it is clear that such FET [as illustrated in Kennan's Fig. 4] would obviously act as a variable load for the mixer according to the operating point of the FET (I-V curve) (see Office Action, page 3, lines 8-10).

Applicant respectfully submits that the Examiner's conclusion, and its application to the requirements set forth in Applicant's claims 24-31, finds no basis in either the cited prior art, or the general knowledge of artisans skilled in the art of active inductors. In fact, the Examiner's position is contrary to the general understanding of skilled artisans in the art of active inductors, where it is well recognized that an "active load", such as that afforded by the use of FETs does not in any way imply a "variable load", as alleged by the Examiner.

As noted above, nowhere does Kennan, Broderick, Tanji or Yamaguchi disclose or suggest that any of the FETs disclosed therein are configured to provide an active variable load,

as alleged by the Examiner. Thus, the Examiner is respectfully requested to provide evidence to support the conclusory statements as to the alleged common knowledge in the art of active inductors. In this regard, the Examiner is directed to MPEP 2144.03 which states, *inter alia*, “[i]t is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based” (MPEP 2144.03(E)).

Furthermore, in as much as the Examiner alleges that Kennan’s FET, shown in Fig. 4 “would obviously act as a variable load for the mixer” (see Office Action, page 3, emphasis added), the Examiner puts forth an “inherency” argument. However, not only does the Examiner’s “inherency” argument lack support in the prior art, it is contrary to well established legal principles. *See Tyler Refrigeration v. Kysor Industrial Corp .*, 777 F.2d 687, 689 (Fed. Cir. 1985) (“A feature is inherent if it naturally occurs under the conditions set forth in the reference, even though the reference does not expressly mention the feature”, emphasis added). That is, the Examiner’s statement that Kennan’s FET operates “according to the operating point of the FET (I-V curve)” is a simply a conclusory statement as to the operation of a conventional FET, which may be employed in a conventional manner as an active load. Nowhere does Kennan disclose, teach or suggest that, nor does the Examiner explain how, any of the FETs discloses in Kennan provide a variable load on the mixer, as alleged by the Examiner. *See Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int.) (“In relying upon theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination

that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art", original emphasis).

Thus, the Examiner has failed to formulate a *prima facie* case of obviousness in that the Examiner failed to presented any factual basis to support the alleged "common knowledge" which forms the primary basis of the Examiner's rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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23373

CUSTOMER NUMBER

Date: July 15, 2004